

WHAT IS CLAIMED IS:

1. An automatic gain control (AGC) apparatus having a short settling time in a burst mode optical receiver, comprising:

5 a variable gain amplifier for variably amplifying an input signal according to an AGC adjustment control signal;

a clipper coupled to an output terminal of the variable gain amplifier for comparing an output signal of the variable gain amplifier with a preset signal V_{cut} and for outputting a signal difference when the output signal of the variable gain amplifier is 10 higher than or equal to the preset signal V_{cut} in amplitude;

an exponential amplifier for exponentially amplifying an output signal of the clipper; and

a peak holder for detecting a peak value from an output signal of the exponential amplifier and for generating the AGC adjustment control signal for controlling a gain of the 15 variable gain amplifier.

2. The AGC apparatus of claim 1, further comprising a voltage controlled variable resistor (VCVR) coupled in parallel to the peak holder for creating a current leakage path and for preventing overcurrent from flowing in the peak holder when the 20 output signal of the exponential amplifier is larger than or equal to a preset threshold.

3. The AGC apparatus of claim 1, wherein the peak holder comprises:
 - a peak value detector for converting a DC (Direct Current) level of an output signal of the exponential amplifier so that the DC level of the output signal of the exponential amplifier is matched to a DC level of the peak holder; and
- 5 a peak value keeper for keeping a peak value of the output signal of the exponential amplifier and for generating the AGC adjustment control signal to control a gain of the variable gain amplifier from the kept peak value.

4. The AGC apparatus of claim 3, wherein the peak value keeper initializes
- 10 the kept peak value according to an initialization signal.

5. The AGC apparatus of claim 4, wherein, upon receiving a signal that there is no more data input to the AGC apparatus, the initialization signal is delivered to initialize the peak value keeper in order to detect a new peak value when the next data is
- 15 received.

6. The AGC apparatus of claim 1, wherein the clipper and the exponential amplifier comprise:
 - a first transistor having a base receiving an output signal of the variable gain
 - 20 amplifier, a collector connected in common to a supply voltage Vcc and one end of a first resistor, and an emitter connected in common to an emitter of a second transistor and one end of a second resistor;

a second transistor having a base receiving a specific voltage value corresponding to a preset clipping value, a collector connected to another end of the first resistor, and an emitter connected in common to the emitter of the first transistor and one end of the second resistor;

5 the first resistor having one end connected in common to the collector of the first transistor and the supply voltage Vcc, and another end connected to the collector of the second transistor; and

 the second resistor having one end connected in common to the emitter of the first transistor and the emitter of the second transistor, and another end grounded.